

SEQUENCE LISTING

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De Bolle, Miguel
Ray, John

<120> Genetic Method For The Expression Of Polyproteins In
Plants

<130> PPD50348/UST

<140>

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<150> GB 9818001.1

<151> 1998-08-18

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<151> 1998-12-04

<150> PCT/GB99/02716

<151> 1999-08-17

<160> 81

<170> PatentIn Ver. 2.1

<210> 1

<211> 446

<212> DNA

<213> Dahlia merckii

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tatgtagaga agctagcaag acatggtcgg gaaactgtgg caatacggga cattgtgaca 240
accaatgtaa atcatgggag ggtgcggccc atggagcgtg tcatgtgcgt aacgggaaac 300
acatgtgttt ctgttacttc aattgtaaaa aagccgaaaa gcttgctcaa gacaaactta 360
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<210> 2

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<213> Dahlia merckii

<400> 2

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Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
      20              25              30

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Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
  35              40              45

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Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys
 65 70 75 80

Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala Gln
 85 90 95

Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val Val
 100 105 110

Pro Asn Val Glu His Pro
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<210> 3
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 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Linker
 propeptide

<400> 3
 Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly
 1 5 10 15

<210> 4
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Linker
 propeptide

<400> 4
 Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu
 1 5 10 15

Ile Gly Lys Arg
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<210> 5
 <211> 40
 <212> PRT
 <213> Dahlia merckii

<400> 5
 Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu
 1 5 10 15

Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys
 20 25 30

Val Val Pro Asn Val Glu His Pro
 35 40

<210> 6
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 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Linker
 propeptide

<400> 6
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 1 5 10 15
 Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys
 20 25 30

Val Val Pro Asn Val Glu His Pro Ile Gly Lys Arg
 35 40

<210> 7
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 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Linker
 propeptide

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 1 5 10 15
 Ile Gly Lys Arg
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<210> 8
 <211> 31
 <212> PRT
 <213> Amaranthus caudatus

<400> 8
 Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr
 1 5 10 15
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 20 25 30

<210> 9
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<220>
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 <222> (76)..(513)

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 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
 1 5 10
 ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
 Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
 15 20 25
 gaa cta tgc gag aaa gct agc aag acg tgg tgc ggc aac tgt ggc aac 207
 Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
 30 35 40
 acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255
 Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
 45 50 55 60
 gga gcg tgt cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc 303
 Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
 65 70 75
 aat tgt tcc aac gct gct gac gag gtg gct acc cca gag gac gtg gag 351
 Asn Cys Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu
 80 85 90
 cca gga cag aag ttg tgc caa agg cca agt ggg aca tgg tca gga gtc 399
 Pro Gly Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val
 95 100 105
 tgt gga aac aat aac gca tgc aag aat cag tgc att aga ctt gag aaa 447
 Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys
 110 115 120
 gca cga cat gga tct tgc aac tat gtc ttc cca gct cac aag tgt atc 495
 Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile
 125 130 135 140
 tgc tac ttt cct tgt taa taggagctc 522
 Cys Tyr Phe Pro Cys
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<210> 10
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<220>

<223> Description of Artificial Sequence: Synthetic
sequence

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35 40 45Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
50 55 60Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
65 70 75 80Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly Gln Lys
85 90 95Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val Cys Gly Asn Asn
100 105 110Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly
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130 135 140Cys
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<210> 11

<211> 534

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
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<220>

<221> CDS

<222> (76)..(525)

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Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
1 5 10ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
15 20 25

gaa cta tgc gag aaa gct agc aag acg tgg tgc ggc aac tgt ggc aac 207
 Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
 30 35 40
 acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255
 Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
 45 50 55 60
 gga gcg tgt cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc 303
 Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
 65 70 75
 aat tgt aaa aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa 351
 Asn Cys Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu
 80 85 90
 caa ctc atc gga aag agg cag aag ttg tgc caa agg cca agt ggg aca 399
 Gln Leu Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr
 95 100 105
 tgg tca gga gtc tgt gga aac aat aac gca tgc aag aat cag tgc att 447
 Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile
 110 115 120
 aga ctt gag aaa gca cga cat gga tct tgc aac tat gtc ttc cca gct 495
 Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala
 125 130 135 140
 cac aag tgt atc tgc tac ttt cct tgt taa taggagctc 534
 His Lys Cys Ile Cys Tyr Phe Pro Cys
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<210> 12

<211> 149

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 12

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 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys
 65 70 75 80
 Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ile Gly
 85 90 95

Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val
 100 105 110

Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys
 115 120 125

Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile
 130 135 140

Cys Tyr Phe Pro Cys
 145

<210> 13
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
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 <222> (6)
 <223> n is any residue

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<220>
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<220>
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 <223> n is any residue

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 <223> n is any residue

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<210> 14
 <211> 8
 <212> PRT
 <213> Dahlia merckii

<400> 14
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<210> 15
 <211> 606
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
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<220>
 <221> CDS
 <222> (76)..(597)

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 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
 1 5 10

ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
 Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
 15 20 25

gaa cta tgc gag aaa gct agc aag acg tgg tgc gcc aac tgt ggc aac 207
 Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
 30 35 40

acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255
 Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
 45 50 55 60

gga gcg tgt cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc 303
 Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
 65 70 75

aat tgt aaa aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa 351
 Asn Cys Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu
 80 85 90

caa ctc gct caa gac aaa ctt aat gcc caa aag ctt gac cgt gat gcc 399
 Gln Leu Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala
 95 100 105

aag aaa gtg gtt cca aac gtt gaa cat ccg atc gga aag agg cag aag 447
 Lys Lys Val Val Pro Asn Val Glu His Pro Ile Gly Lys Arg Gln Lys
 110 115 120

ttg tgc caa agg cca agt ggg aca tgg tca gga gtc tgt gga aac aat 495
 Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val Cys Gly Asn Asn
 125 130 135 140

aac gca tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga 543
 Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly
 145 150 155

tct tgc aac tat gtc ttc cca gct cac aag tgt atc tgc tac ttt cct 591
 Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro
 160 165 170

tgt taa taggagctc 606
 Cys

<210> 16
 <211> 173
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
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<400> 16
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 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys
 65 70 75 80
 Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala Gln
 85 90 95
 Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val Val
 100 105 110
 Pro Asn Val Glu His Pro Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg
 115 120 125
 Pro Ser Gly Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
 130 135 140
 Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
 145 150 155 160
 Val Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 165 170

<210> 17
 <211> 534
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
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<220>

<221> CDS

<222> (76)..(525)

<400> 17

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          Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
            1             5             10

ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
          15             20             25

gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac 207
Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
          30             35             40

acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255
Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
          45             50             55             60

gga gcg tgt cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc 303
Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
          65             70             75

aat tgt gcc agt act act gtg gat cac caa gct gat gtt gct gcc acc 351
Asn Cys Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr
          80             85             90

aaa act atc gga aag agg cag aag ttg tgc caa agg cca agt ggg aca 399
Lys Thr Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr
          95             100             105

tgg tca gga gtc tgt gga aac aat aac gca tgc aag aat cag tgc att 447
Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile
          110             115             120

aga ctt gag aaa gca cga cat gga tct tgc aac tat gtc ttc cca gct 495
Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala
          125             130             135             140

cac aag tgt atc tgc tac ttt cct tgt taa taggagctc 534
His Lys Cys Ile Cys Tyr Phe Pro Cys
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<210> 18

<211> 149

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 18

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Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
  1             5             10             15

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Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Ser
 65 70 75 80

Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr Ile Gly
 85 90 95

Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val
 100 105 110

Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys
 115 120 125

Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile
 130 135 140

Cys Tyr Phe Pro Cys
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<210> 19
 <211> 316
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
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<220>
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 <222> (76)..(312)

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 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
 1 5 10

ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
 Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
 15 20 25

gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac 207
 Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
 30 35 40

acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255
 Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
 45 50 55 60

gga gcg tgt cat gtg cgt aat ggg aaa cac atg tgt ttc tgt tac ttc 303
 Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
 65 70 75

aat tgt tga gctc 316
 Asn Cys

<210> 20
 <211> 78
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 20
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys
 65 70 75

<210> 21
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Linker
 peptide

<400> 21
 Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu
 1 5 10

<210> 22
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Linker
 peptide

<400> 22
 Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp
 1 5 10

<210> 23
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Linker
 peptide

<400> 23
 Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu
 1 5 10

<210> 24
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Linker
 peptide

<400> 24
 Ala Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu
 1 5 10 15

Leu Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp
 20 25

<210> 25
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Linker
 propeptide

<400> 25
 Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu
 1 5 10 15

Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg
 20 25

<210> 26
 <211> 52
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Linker
propeptide

<400> 26

Lys	Lys	Ala	Glu	Lys	Leu	Ala	Gln	Asp	Lys	Leu	Lys	Ala	Glu	Gln	Leu
1				5					10					15	

Ala	Gln	Asp	Lys	Leu	Asn	Ala	Gln	Lys	Leu	Asp	Arg	Asp	Ala	Lys	Lys
			20					25					30		

Val	Val	Pro	Asn	Val	Glu	His	Pro	Ile	Gly	Lys	Arg	Ile	Gly	Lys	Arg
			35					40					45		

Ile	Gly	Lys	Arg
			50

<210> 27

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Linker
propeptide

<400> 27

Ala	Ser	Thr	Thr	Val	Asp	His	Gln	Ala	Asp	Val	Ala	Ala	Thr	Lys	Thr
1				5					10					15	

Ile	Gly	Lys	Arg	Ile	Gly	Lys	Arg	Ile	Gly	Lys	Arg
			20					25			

<210> 28

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Linker
propeptide

<400> 28

Ser	Asn	Ala	Ala	Asp	Glu	Val	Ala	Thr	Gln	Leu	Leu	Asn	Phe	Asp	Leu
1				5					10					15	

Leu	Lys	Leu	Ala	Gly	Asp	Val	Glu	Ser	Asn	Pro	Gly	Pro
			20					25				

<210> 29

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Linker peptide

<400> 29

Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly
 1 5 10 15

<210> 30

<211> 446

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<220>

<221> CDS

<222> (3)..(437)

<400> 30

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Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu	
1 5 10 15	
ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc	95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys	
20 25 30	
gag aaa gct agc aag acg tgg tgg ggc aac tgt ggc aac acg gga cat	143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His	
35 40 45	
tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt	191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys	
50 55 60	
cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt aac	239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Asn	
65 70 75	
gcg gcc gac gag gtg gct acc cca gag gac gtg gaa cct ggt cag aag	287
Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly Gln Lys	
80 85 90 95	
ttg tgc caa agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat	335
Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn	
100 105 110	
aac gca tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga	383
Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly	
115 120 125	
tct tgc aac tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct	431
Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro	
130 135 140	
tgt taa taggagctc	446
Cys	

<210> 31
 <211> 144
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 31
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 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Asn Ala
 65 70 75 80
 Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly Gln Lys Leu
 85 90 95
 Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn
 100 105 110
 Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser
 115 120 125
 Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 130 135 140

<210> 32
 <211> 443
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<220>
 <221> CDS
 <222> (3)..(434)

<400> 32
 cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
 1 5 10 15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc	95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys	
20 25 30	
gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat	143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His	
35 40 45	
tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt	191
Cys Asp Asn Gln Cys Lys Ser Trp Ser Gly Glu Ala Ala His Gly Ala Cys	
50 55 60	
cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc	239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser	
65 70 75	
aac gcg gcc gac gag gtg gct acc cca gag gac gtg gaa cag aag ttg	287
Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Gln Lys Leu	
80 85 90 95	
tgc caa agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac	335
Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn	
100 105 110	
gca tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct	383
Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser	
115 120 125	
tgc aac tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt	431
Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys	
130 135 140	
taa taggagctc	443

<210> 33

<211> 143

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 33

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
1 5 10 15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
20 25 30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
35 40 45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
50 55 60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
65 70 75 80

Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Gln Lys Leu Cys
 85 90 95

Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala
 100 105 110

Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys
 115 120 125

Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 130 135 140

<210> 34
 <211> 437
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<220>
 <221> CDS
 <222> (3)..(428)

<400> 34
 cc atg gtg aat cgg tgg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
 1 5 10 15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95
 Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
 20 25 30

gag aaa gct agc aag acg tgg tgg ggc aac tgt ggc aac acg gga cat 143
 Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
 35 40 45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191
 Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
 50 55 60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc 239
 His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser
 65 70 75

aac gcg gcc gac gag gtg gct acc cca gag gac cag aag ttg tgc caa 287
 Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Gln Lys Leu Cys Gln
 80 85 90 95

agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc 335
 Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys
 100 105 110

aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac 383
 Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
 115 120 125

tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa 428
 Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 130 135 140

taggagctc 437

<210> 35
 <211> 141
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 35
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
 65 70 75 80
 Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Gln Lys Leu Cys Gln Arg
 85 90 95
 Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
 100 105 110
 Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
 115 120 125
 Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 130 135 140

<210> 36
 <211> 434
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<220>
 <221> CDS
 <222> (3)..(425)

<400> 36

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cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt      47
  Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
    1             5             10             15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc      95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
          20             25             30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat     143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
          35             40             45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt     191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
          50             55             60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc     239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser
          65             70             75

aac gcg gcc gac gag gtg gct acc cca gag cag aag ttg tgc caa agg     287
Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Gln Lys Leu Cys Gln Arg
          80             85             90             95

cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc aag     335
Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
          100            105            110

aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac tat     383
Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
          115            120            125

cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa taggagctc 434
Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
          130            135            140

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<210> 37

<211> 140

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 37

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Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
  1             5             10             15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
          20             25             30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
          35             40             45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
          50             55             60

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Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
65 70 75 80

Ala Ala Asp Glu Val Ala Thr Pro Glu Gln Lys Leu Cys Gln Arg Pro
85 90 95

Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn
100 105 110

Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Arg
115 120 125

Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
130 135 140

<210> 38
<211> 485
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<220>
<221> CDS
<222> (3)..(476)

<400> 38
cc atg gtg aat cgg tgc gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
1 5 10 15

ttc gtg ctg gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
20 25 30

gag aaa gct agc aag acg tgg tgc ggc aac tgt ggc aac acg gga cat 143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
35 40 45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
50 55 60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt gct 239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala
65 70 75

aac gct gag gaa gct gct gct gct att cct gaa gct tct gaa gaa ctt 287
Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu
80 85 90 95

gct caa gaa gaa gct cct gtg tac agt gaa gat cag aag ttg tgc caa 335
Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln
100 105 110

agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc 383
 Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys
 115 120 125

aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac 431
 Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
 130 135 140

tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa 476
 Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 145 150 155

taggagctc 485

<210> 39
 <211> 157
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 39
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Asn
 65 70 75 80
 Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala
 85 90 95
 Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln Arg
 100 105 110
 Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
 115 120 125
 Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
 130 135 140
 Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 145 150 155

<210> 40
 <211> 1093
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<220>

<221> CDS

<222> (3)..(1085)

<400> 40

cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt	47
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu	
1 5 10 15	
ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc	95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys	
20 25 30	
gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat	143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His	
35 40 45	
tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt	191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys	
50 55 60	
cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aac tgc gct	239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala	
65 70 75	
aac gct gag gaa gct gct gct gct att cct gaa gct tct gaa gaa ctt	287
Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu	
80 85 90 95	
gct caa gaa gaa gct cct gtg tac agt gaa gat cag aag ttg tgc caa	335
Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln	
100 105 110	
agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc	383
Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys	
115 120 125	
aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac	431
Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn	
130 135 140	
tat cgt ttc cca gct cac aag tgt atc tgc tac ttc cct tgt gcg aat	479
Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys Ala Asn	
145 150 155	
gct gaa gaa gct gct gct gct att cct gaa gct tct gaa gaa ctt gct	527
Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala	
160 165 170 175	
caa gaa gaa gca ccg gtt tac tct gaa gat gac gga gtg aag ctc tgc	575
Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Asp Gly Val Lys Leu Cys	
180 185 190	
gac gtg cca tcc gga acc tgg tcc gga cac tgc ggt tcc tcc agc aag	623
Asp Val Pro Ser Gly Thr Trp Ser Gly His Cys Gly Ser Ser Ser Lys	
195 200 205	

tgc agc caa caa tgc aag gac agg gag cac ttc gct tac gga gga gct 671
Cys Ser Gln Gln Cys Lys Asp Arg Glu His Phe Ala Tyr Gly Gly Ala
210 215 220

tgc cac tac caa ttc cca tcc gtg aag tgc ttc tgc aag agg caa tgc 719
Cys His Tyr Gln Phe Pro Ser Val Lys Cys Phe Cys Lys Arg Gln Cys
225 230 235

gct aac gct gag gaa gct gct gct gct att cct gaa gct tct gaa gaa 767
Ala Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu
240 245 250 255

ctt gct caa gaa gaa gct cct gtg tac agt gaa gat cag aac ata tgc 815
Leu Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Asn Ile Cys
260 265 270

cca agg gtt aat cga att gtg aca ccc tgt gtg gcc tac gga ctc gga 863
Pro Arg Val Asn Arg Ile Val Thr Pro Cys Val Ala Tyr Gly Leu Gly
275 280 285

agg gca cca atc gcc cca tgc tgc aga gcc ctg aac gat cta cgg ttt 911
Arg Ala Pro Ile Ala Pro Cys Cys Arg Ala Leu Asn Asp Leu Arg Phe
290 295 300

gtg aat act aga aac cta cga cgt gct gca tgc cgc tgc ctc gta ggg 959
Val Asn Thr Arg Asn Leu Arg Arg Ala Ala Cys Arg Cys Leu Val Gly
305 310 315

gta gtg aac cgg aac ccc ggt ctg aga cga aac cct aga ttt cag aac 1007
Val Val Asn Arg Asn Pro Gly Leu Arg Arg Asn Pro Arg Phe Gln Asn
320 325 330 335

att cct cgt gat tgt cgc aac acc ttt gtt cgt ccc ttc tgg tgg cgt 1055
Ile Pro Arg Asp Cys Arg Asn Thr Phe Val Arg Pro Phe Trp Trp Arg
340 345 350

cca aga att caa tgc ggc agg att aac taa tagagctc 1093
Pro Arg Ile Gln Cys Gly Arg Ile Asn
355 360

<210> 41

<211> 360

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 41

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
1 5 10 15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
20 25 30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
35 40 45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Asn
 65 70 75 80
 Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala
 85 90 95
 Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln Arg
 100 105 110
 Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
 115 120 125
 Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
 130 135 140
 Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys Ala Asn Ala
 145 150 155 160
 Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala Gln
 165 170 175
 Glu Glu Ala Pro Val Tyr Ser Glu Asp Asp Gly Val Lys Leu Cys Asp
 180 185 190
 Val Pro Ser Gly Thr Trp Ser Gly His Cys Gly Ser Ser Ser Lys Cys
 195 200 205
 Ser Gln Gln Cys Lys Asp Arg Glu His Phe Ala Tyr Gly Gly Ala Cys
 210 215 220
 His Tyr Gln Phe Pro Ser Val Lys Cys Phe Cys Lys Arg Gln Cys Ala
 225 230 235 240
 Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu
 245 250 255
 Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Asn Ile Cys Pro
 260 265 270
 Arg Val Asn Arg Ile Val Thr Pro Cys Val Ala Tyr Gly Leu Gly Arg
 275 280 285
 Ala Pro Ile Ala Pro Cys Cys Arg Ala Leu Asn Asp Leu Arg Phe Val
 290 295 300
 Asn Thr Arg Asn Leu Arg Arg Ala Ala Cys Arg Cys Leu Val Gly Val
 305 310 315 320
 Val Asn Arg Asn Pro Gly Leu Arg Arg Asn Pro Arg Phe Gln Asn Ile
 325 330 335
 Pro Arg Asp Cys Arg Asn Thr Phe Val Arg Pro Phe Trp Trp Arg Pro
 340 345 350
 Arg Ile Gln Cys Gly Arg Ile Asn
 355 360

<210> 42
 <211> 485
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<220>
 <221> CDS
 <222> (3)..(476)

<400> 42
 cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
 1 5 10 15
 ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95
 Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
 20 25 30
 gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat 143
 Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
 35 40 45
 tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191
 Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
 50 55 60
 cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt aaa 239
 His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys
 65 70 75
 aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa caa ctc atc 287
 Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ile
 80 85 90 95
 gga aag agg atc gga aag agg atc gga aag agg cag aag ttg tgc caa 335
 Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg Gln Lys Leu Cys Gln
 100 105 110
 agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc 383
 Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys
 115 120 125
 aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac 431
 Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
 130 135 140
 tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa 476
 Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 145 150 155
 taggagctc 485

<210> 43
 <211> 157
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 43
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys
 65 70 75 80
 Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ile Gly
 85 90 95
 Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg
 100 105 110
 Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
 115 120 125
 Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
 130 135 140
 Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 145 150 155

<210> 44
 <211> 557
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<220>
 <221> CDS
 <222> (3)..(548)

<400> 44
 cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
 1 5 10 15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95
 Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
 20 25 30

gag aaa gct agc aag acg tgg tgc ggc aac tgt ggc aac acg gga cat 143
 Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
 35 40 45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191
 Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
 50 55 60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt aaa 239
 His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys
 65 70 75

aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa caa ctc gct 287
 Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala
 80 85 90 95

caa gac aaa ctt aat gcc caa aag ctt gac cgt gat gcc aag aaa gtg 335
 Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val
 100 105 110

gtt cca aac gtt gaa cat ccg atc gga aag agg atc gga aag agg atc 383
 Val Pro Asn Val Glu His Pro Ile Gly Lys Arg Ile Gly Lys Arg Ile
 115 120 125

gga aag agg cag aag ttg tgc caa agg cca agt cgt aca tgg tca gga 431
 Gly Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly
 130 135 140

gtc tgt gga aac aat aac gca tgc aag aat cag tgc att aga ctt gag 479
 Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu
 145 150 155

aaa gca cga cat gga tct tgc aac tat cgt ttc cca gct cac aag tgt 527
 Lys Ala Arg His Gly Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys
 160 165 170 175

atc tgc tac ttt cct tgt taa taggagctc 557
 Ile Cys Tyr Phe Pro Cys
 180

<210> 45

<211> 181

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 45

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys
 65 70 75 80
 Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala Gln
 85 90 95
 Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val Val
 100 105 110
 Pro Asn Val Glu His Pro Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly
 115 120 125
 Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val
 130 135 140
 Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys
 145 150 155 160
 Ala Arg His Gly Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile
 165 170 175
 Cys Tyr Phe Pro Cys
 180

<210> 46
 <211> 485
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<220>
 <221> CDS
 <222> (3)..(476)

<400> 46
 cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
 1 5 10 15
 ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95
 Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
 20 25 30
 gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat 143
 Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
 35 40 45
 tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191
 Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
 50 55 60

cat	gtg	cgt	aac	ggg	aaa	cac	atg	tgt	ttc	tgt	tac	ttc	aat	tgt	gcc	239
His	Val	Arg	Asn	Gly	Lys	His	Met	Cys	Phe	Cys	Tyr	Phe	Asn	Cys	Ala	
	65						70					75				
agt	act	act	gtg	gat	cac	caa	gct	gat	gtt	gct	gcc	acc	aaa	act	atc	287
Ser	Thr	Thr	Val	Asp	His	Gln	Ala	Asp	Val	Ala	Ala	Thr	Lys	Thr	Ile	
	80					85				90					95	
gga	aag	agg	atc	gga	aag	agg	atc	gga	aag	agg	cag	aag	ttg	tgc	caa	335
Gly	Lys	Arg	Ile	Gly	Lys	Arg	Ile	Gly	Lys	Arg	Gln	Lys	Leu	Cys	Gln	
			100							105					110	
agg	cca	agt	cgt	aca	tgg	tca	gga	gtc	tgt	gga	aac	aat	aac	gca	tgc	383
Arg	Pro	Ser	Arg	Thr	Trp	Ser	Gly	Val	Cys	Gly	Asn	Asn	Asn	Ala	Cys	
			115					120					125			
aag	aat	cag	tgc	att	aga	ctt	gag	aaa	gca	cga	cat	gga	tct	tgc	aac	431
Lys	Asn	Gln	Cys	Ile	Arg	Leu	Glu	Lys	Ala	Arg	His	Gly	Ser	Cys	Asn	
		130					135					140				
tat	ctg	ttc	cca	gct	cac	aag	tgt	atc	tgc	tac	ttt	cct	tgt	taa		476
Tyr	Leu	Phe	Pro	Ala	His	Lys	Cys	Ile	Cys	Tyr	Phe	Pro	Cys			
	145					150					155					
taggagctc																485

<210> 47
 <211> 157
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 47
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Ser
 65 70 75 80
 Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr Ile Gly
 85 90 95
 Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg
 100 105 110
 Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
 115 120 125

Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
 130 135 140

Leu Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 145 150 155

<210> 48

<211> 488

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 sequence

<220>

<221> CDS

<222> (3)..(479)

<400> 48

cc atg gtg aat cgg tgg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt	47
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu	
1 5 10 15	
ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc	95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys	
20 25 30	
gag aaa gct agc aag acg tgg tgg ggc aac tgt ggc aac acg gga cat	143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His	
35 40 45	
tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt	191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys	
50 55 60	
cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc	239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser	
65 70 75	
aac gcg gcc gac gag gtg gct acc cag ctg ttg aat ttt gac ctt ctt	287
Asn Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu Leu	
80 85 90 95	
aag ctt gcg gga gac gtc gag tcc aac cct ggg ccc cag aag ttg tgc	335
Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro Gln Lys Leu Cys	
100 105 110	
caa agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca	383
Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala	
115 120 125	
tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc	431
Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys	
130 135 140	

aac tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa 479
 Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 145 150 155

taggagctc 488

<210> 49
 <211> 158
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 49
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
 65 70 75 80
 Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu Leu Lys
 85 90 95
 Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro Gln Lys Leu Cys Gln
 100 105 110
 Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys
 115 120 125
 Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
 130 135 140
 Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 145 150 155

<210> 50
 <211> 575
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<220>
 <221> CDS
 <222> (3)..(566)

<400> 50

cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt	47
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu	
1 5 10 15	
ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc	95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys	
20 25 30	
gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat	143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His	
35 40 45	
tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt	191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys	
50 55 60	
cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc	239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser	
65 70 75	
aac gcg gcc gac gag gtg gct acc cag ctg ttg aat ttt gac ctt ctt	287
Asn Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu Leu	
80 85 90 95	
aag ctt gcg gga gac gtc gag tcc aac cct ggg ccc atg gct aag ttt	335
Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro Met Ala Lys Phe	
100 105 110	
gcg tcc atc atc gca ctt ctt ttt gct gct ctt gtt ctt ttt gct gct	383
Ala Ser Ile Ile Ala Leu Leu Phe Ala Ala Leu Val Leu Phe Ala Ala	
115 120 125	
ttc gaa gca cca aca atg gtg gaa gca cag aag ttg tgc caa agg cca	431
Phe Glu Ala Pro Thr Met Val Glu Ala Gln Lys Leu Cys Gln Arg Pro	
130 135 140	
agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc aag aat	479
Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn	
145 150 155	
cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac tat cgt	527
Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Arg	
160 165 170 175	
ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa taggagctc	575
Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys	
180 185	

<210> 51

<211> 187

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 51

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
 65 70 75 80
 Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu Leu Lys
 85 90 95
 Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro Met Ala Lys Phe Ala
 100 105 110
 Ser Ile Ile Ala Leu Leu Phe Ala Ala Leu Val Leu Phe Ala Ala Phe
 115 120 125
 Glu Ala Pro Thr Met Val Glu Ala Gln Lys Leu Cys Gln Arg Pro Ser
 130 135 140
 Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln
 145 150 155 160
 Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Arg Phe
 165 170 175
 Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 180 185

<210> 52

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
 Oligonucleotide

<220>

<221> misc_feature

<222> (9)

<223> n is any residue

<220>

<221> misc_feature

<222> (12)

<223> n is any residue

<220>
 <221> misc_feature
 <222> (15)
 <223> n is any residue

<400> 52
 carttraant ancanaaaarc acat

24

<210> 53
 <211> 8
 <212> PRT
 <213> Dahlia merckii

<400> 53
 Met Cys Phe Cys Tyr Phe Asn Cys
 1 5

<210> 54
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 Oligonucleotide

<400> 54
 aaacacatgt gtttcccatt

20

<210> 55
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 Oligonucleotide

<400> 55
 agcgtgtcat gtgcgtaat

19

<210> 56
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 Oligonucleotide

<400> 56
 taaagaaacc gaccctttca cgg

23

<210> 57
 <211> 107
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 57
 atgcatccat ggtgaatcgg tcggttgctg tctccgcgtt cgttctgac cttttcgtgc 60
 tcgccatctc agatatcgca tccgttagtg gagaactatg cgagaaa 107

<210> 58
 <211> 37
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 58
 aaaccgaccg agctcacgga tgttcaacgt ttggaac 37

<210> 59
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 59
 agcaagcttt tcgggagctc aacaattgaa gtaa 34

<210> 60
 <211> 89
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 60
 gcctttggca caacttctgt cctggctcca cgtcctctgg ggtagccacc tcgtcagcag 60
 cgttggaaca attgaagtaa cagaaacac 89

<210> 61
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 61
 ttagagctcc tattaacaag gaaagtagc 29

<210> 62
 <211> 55
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 62
 gcctttggca caacttctgc ctctttccga tgagttgttc ggctttaagt ttgtc 55

<210> 63
 <211> 53
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 63
 gcctttggca caacttctgc ctctttccga tcggatgttc aacgtttgga acc 53

<210> 64
 <211> 101
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 64
 gcctttggca caacttctgc ctctttccga tagttttggt ggcagcaaca tcagcttggt 60
 gatccacagt agtactggca caattgaagt aacagaaaca c 101

<210> 65
 <211> 4
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 65
 Lys Asp Glu Leu
 1

<210> 66
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 Oligonucleotide

<220>
 <221> misc_feature
 <222> (9)
 <223> n is any residue

<220>
 <221> misc_feature
 <222> (12)
 <223> n is any residue

<220>
 <221> misc_feature
 <222> (21)
 <223> n is any residue

<400> 66
 atggcsaanm rntcrgttgc ntt

23

<210> 67
 <211> 4
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 67
 Ile Gly Lys Arg
 1

<210> 68
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 68
 aggaagttca tttcatttgg

20

<210> 69
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Determined
 N-terminal sequence

<400> 69
 Glu Leu Cys Glu Lys Ala Ser
 1 5

<210> 70
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Determined
 N-terminal sequence

<400> 70
 Asp Val Glu Pro Gly Gln Lys
 1 5

<210> 71
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Determined
 N-terminal sequence

<400> 71
 Leu Ile Gly Lys Arg Gln Lys
 1 5

<210> 72
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Predicted
 C-terminal sequence

<400> 72
 Cys Tyr Phe Asn Cys Ser
 1 5

<210> 73
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Predicted
 C-terminal sequence

<400> 73
 Ile Cys Tyr Phe Pro Cys
 1 5

<210> 74
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Predicted
 C-terminal sequence

<400> 74
 Cys Tyr Phe Asn Pro Ser
 1 5

<210> 75
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Predicted
 C-terminal sequence

<400> 75
 Cys Tyr Phe Asn Cys Lys
 1 5

<210> 76
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Predicted
 C-terminal sequence

<400> 76
 Cys Tyr Phe Asn Cys Ala
 1 5

<210> 77
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 77
 Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg
 1 5 10

<210> 78
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 78
 Val Ser Gly Glu Leu Cys
 1 5

<210> 79
 <211> 22
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 79
 Phe Asn Cys Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val
 1 5 10 15

Glu Pro Gly Gln Lys Leu
 20

<210> 80
 <211> 26
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 80
 Phe Asn Cys Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala
 1 5 10 15

Glu Gln Leu Ile Gly Lys Arg Gln Lys Leu
 20 25

<210> 81
 <211> 26
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 81

Phe	Asn	Cys	Ala	Ser	Thr	Thr	Val	Asp	His	Gln	Ala	Asp	Val	Ala	Ala
1				5					10					15	

Thr	Lys	Thr	Ile	Gly	Lys	Arg	Gln	Lys	Leu
			20					25	